

Appl. No. 10/667,699  
Amdt. dated November 2, 2005  
Reply to office action of August 29, 2005

1. (original): A method of collecting data for a geographic database that represents roads in a geographic region, the method comprising:
  - with a vehicle that travels along the roads, using a barometer associated with the vehicle to collect data indicating altitudes as the vehicle travels along the roads;
  - analyzing said altitude data;
  - based on said analyzing, deriving road grade data along said roads; and
  - storing data in said geographic database that represent road grade.
2. (original): The method of Claim 1 wherein said road grade data indicates a location of a road grade change point.
3. (original): The method of Claim 1 wherein said road grade data indicates a direction of the road grade.
4. (original): The method of Claim 1 wherein said road grade data indicates a section of constant road grade along the road.(original): The method of Claim 1 wherein said road grade data indicates a road grade value.
5. (original): The method of Claim 1 further comprising collecting data indicating positions of the vehicle as the vehicle travels along the roads.
6. (original): The method of Claim 1 further comprising:
  - identifying a change in altitude value between consecutively collected altitude data exceeding a threshold amount.

Appl. No. 10/667,699  
Amdt. dated November 2, 2005  
Reply to office action of August 29, 2005

7. (original): The method of Claim 7 wherein said change in altitude corresponds to a change in window position associated with the vehicle.

8. (original): The method of Claim 7 wherein said change in altitude corresponds to a change in operation of an air conditioning unit associated with the vehicle.

10. (original): The method of Claim 1 further comprising:  
filtering the altitude data to remove outlier data.

11. (original): The method of Claim 1 wherein the vehicle is a probe data collection vehicle that collects data while traveling in the geographic region for purposes other than data collection.

12. (original): A method of obtaining data for a geographic database using a vehicle moving on roads in a geographic region comprising:  
collecting data indicating atmospheric pressure and position of the vehicle as the vehicle travels on roads in the geographic region;  
analyzing the atmospheric pressure data and the position data to identify a section of constant road grade along the road traveled by the vehicle; and  
updating the geographic database to indicate the section of constant road grade.

13. (original): The method of Claim 12 wherein the atmospheric pressure data is obtained from a barometer associated with the vehicle.

14. (original): The method of Claim 12 further comprising identifying a direction of the road grade.

15. (original): The method of Claim 12 further comprising identifying a road grade change point.

Appl. No. 10/667,699  
Amdt. dated November 2, 2005  
Reply to office action of August 29, 2005

16. (original): The method of Claim 12 further comprising identifying a road grade value for the section of constant road grade.

17. (original): A system for collecting data for a geographic database that represents roads in a geographic region comprising:

a data collection unit located in a vehicle that travel along the roads in the geographic region;

a barometer associated with the vehicle, said barometer providing altitude data to said data collection unit;

a positioning system associated with the vehicle, said positioning system providing position data to said data collection unit; and

a data processing unit analyzing said altitude data and said position data, based on said analyzing, inferring road grade data along said roads.

18. (original): The system of Claim 17 wherein said data processing unit is located in a data collection facility.

19. (original): The system of Claim 17 wherein said data collection unit receives data from a navigation system associated with the vehicle.